Mesa: State of the Project

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Agenda

- What happened since last XDC?
- What's up for the next Mesa release?
- And after that?

Where were we?

- Mesa 8.0.4 (July 10, 2012)
  - OpenGL 3.0 (on some hardware)
  - 4 years behind the OpenGL 3.0 spec release (August 2008)

Where did we go?

- Mesa 9.0 (October 8, 2012)
  - OpenGL 3.1
  - Pile of extensions from 3.2, 3.3, and 4.x
  - Added Clover (OpenCL) state tracker
  - 3.5 years behind the OpenGL 3.1 spec release (March 2009)

Where did we go?

- Mesa 9.1 (February 22, 2013)
  - OpenGL ES 3.0
  - Small handful of new extensions
  - Removed some old NVIDIA assembly shader extensions
  - 6 months behind the OpenGL ES 3.0 spec release (August 2012)
    - One of the first shipping implementations

What else happened?

- Shift in release cycle timing
  - 2012 / 2013 were the “six month” cycle years
  - 2013 / 2014 will be the “three month” cycle years
  - Distros got tired of wait for new features to be released, so they just shipped “random” points on master
- Slight change in stable branch policy
  - No longer mark patches “NOTE: This is a candidate...”
  - Instead “Cc: mesa-stable@...”
  - Unmarked patches can be sent to mesa-stable after landing on master
  - Carl Worth has taken over stable branch management
    - And stable releases have been much more regular
    - Isn't it time for 9.2.1???

Where are we going now?

- Mesa 10.0
  - OpenGL 3.3 – The only thing missing is geometry shaders :)
  - GL_ARB_separate_shader_objects
  - GL_ARB_shader_atomic_counters
  - GL_ARB_gpu_shader5
  - GL_ARB_texture_gather
  - Others?
- Most likely release date: November 27th, 2013
  - mesa-10.0 branch should be no later than November 1st

Historical Progress

	Spec Release	Mesa supports	Gap (years)
2.1	08/02/06	04/27/07	0.7
3.0	08/11/08	02/12/12	3.5
3.1	03/24/09	02/22/13	3.9
3.2	08/03/09	11/27/13*	4.3
3.3	03/11/10	11/27/13*	3.7
4.0	03/11/10		
4.1	07/26/10		
4.2	08/08/11		

*Projected. :)

And then?

- Mesa 10.1 (February ??, 2014)
  - ?
- My observations:
  - Nobody seems to want tessellation shaders
  - Nobody seems to want double precision
  - Most people don't even know what “shader subroutines” are
  - Everybody wants compute shaders
- Most likely release date: mid-February 2014
  - Probably make mesa-10.1 branch mid-January

Oh OpenGL 4.x...

- OpenGL 4.0 is 3.3 plus...
  - GL_ARB_texture_query_lod (supported since 9.2)
  - GL_ARB_draw_buffers_blend (supported since 7.11)
  - GL_ARB_draw_indirect
  - GL_ARB_gpu_shader5 (should be 10.0)
  - GL_ARB_gpu_shader_fp64
  - GL_ARB_sample_shading
  - GL_ARB_shader_subroutine
  - GL_ARB_tessellation_shader
  - GL_ARB_texture_buffer_object_rgb32 (supported since 9.1)
  - GL_ARB_texture_cube_map_array (supported since 9.1)
  - GL_ARB_texture_gather (should be in 10.0)
  - GL_ARB_transform_feedback2 (supported since 8.0)
  - GL_ARB_transform_feedback3 (supported since 9.0)

Oh OpenGL 4.x...

- OpenGL 4.1 is 4.0 plus...
  - GL_ARB_ES2_compatibility (supported since 7.9-ish)
  - GL_ARB_get_program_binary (supported since 9.1)
  - “Increases in the required supported sizes for textures and renderbuffers.”
  - GL_ARB_separate_shader_objects (should be in 10.0)
  - GL_ARB_vertex_attrib_64bit
  - GL_ARB_viewport_array

Oh OpenGL 4.x...

- OpenGL 4.2 is 4.1 plus...
  - GL_ARB_texture_compression_bptc
  - GL_ARB_compressed_texture_pixel_storage
  - GL_ARB_shader_atomic_counters (should be in 10.0)
  - GL_ARB_texture_storage (supported since 8.0)
  - GL_ARB_transform_feedback_instanced (supported since 9.0)
  - GL_ARB_shader_image_load_store
  - GL_ARB_conservative_depth (supported since 8.0)
  - GL_ARB_shading_language_420pack (supported since 9.2)
  - GL_ARB_internal_format_query (supported since 9.1)
  - GL_ARB_map_buffer_alignment (supported since 9.1)

Oh OpenGL 4.x...

- All Mesa is missing is...
  - GL_ARB_draw_indirect
  - GL_ARB_gpu_shader_fp64 / GL_ARB_vertex_attrib_64bit
    - *Big pile of work!*
  - GL_ARB_shader_subroutine
    - *Big pile of work!*
  - GL_ARB_sample_shading
  - GL_ARB_tessellation_shader
    - *Big pile of work!*
  - GL_ARB_viewport_array
  - GL_ARB_texture_compression_bptc
  - GL_ARB_compressed_texture_pixel_storage
  - GL_ARB_shader_image_load_store
    - *Big pile of work!*

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